UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/069,088	04/29/1998	SHENG LIANG	06502.0129-0	3016

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EXAMINER
NGUYEN, VAN H

ART UNIT	PAPER NUMBER
2126	30

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 January 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-6,8-22 and 24-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-6,8-22 and 24-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This Office Action is in response to amendment D filed January 27, 2004.

2.   As indicated in the interview on January 22, 2004, the Examiner agreed to

withdraw the restriction requirement mailed on July 2, 2003. Claims 1-6, 8-22, and 24-

33 are presented for examination.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been obvious at
> the time the invention was made to a person having ordinary skill in the art to which said subject
> matter pertains. Patentability shall not be negatived by the manner in which the invention was
> made.

4.   Claims 1-6, 8-22, and 24-33 are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Jackson** (U.S. 5,297,274).

5.   Jackson was cited by the Examiner in the office action mailed July 5, 2000.

6.   As to claims 1, 9, 17, and 25, Jackson teaches the invention substantially as

claimed including a method for time profiling multiple threads of execution

corresponding to a program *(abstract)*, comprising:

        determining whether register data corresponding to a selected thread has changed

from a previous interrupt of all of the threads; and providing an indication of the change

for the selected thread *(abstract, col.3, lines 33-54).*

Jackson does not explicitly teach "periodically interrupting execution of all of the threads."

Jackson, however, discloses *"insert a running thread program into the selected application which continuously generates breakpoint interrupts on a periodic basis"* (abstract and col.3, lines 40-44).

It would have been obvious to apply the teaching of Jackson for *"periodically interrupting execution of all of the threads"* in order to provide means for efficiently identifying areas of the application program requiring excessive execution time.

7.   As to claims 2, 10, and 18, Jackson teaches accessing stored data corresponding to the selected thread *(col.2, lines 8-30)*.

Jackson does not explicitly teach "comparing the stored data with register information stored following a previous interrupt."

Jackson, however, discloses *"the current state of the selected application, including its location counter, is examined and stored. These stored indications of the state of the selected application are then utilized to automatically generate a report including a distribution of the execution times for the selected application" (col.2, lines 8-30)*.

It would have been obvious to apply the teaching of Jackson for "comparing the stored data with register information stored following a previous interrupt" in order to provide means for efficiently identifying areas of the application program requiring excessive execution time.

8.   As to claims 3, 11, and 19, Jackson teaches computing a value corresponding to

the stored data and determining a relationship between the computed value and the

previously stored register information *(col.2, lines 8-30 and col.3, lines 45- 54).*

9.   As to claims 4, 12, and 20, Jackson teaches updating a memory segment to reflect

that the selected thread is running when it is determined that the computed value and the

previously stored register information do not match *(col.3, lines 45- 54 and col.4, lines*

37-59).

10.   As to claims 8, 16, and 24, the rejection of claims 1, 9, and 17 above is

incorporated herein in full. Claims 8, 16, and 24 further recite " indicates that the thread

is running by comparing the information to stored information from previous interrupt of

all threads."

Jackson does not explicitly teach "indicates that the thread is running by

comparing the information to stored information from previous interrupt of all threads."

Jackson, however, discloses *"Each time a breakpoint interrupt is generated by*

the running thread program execution of the selected application is suspended and the

current state of the selected application, including its location counter, is examined and

stored. These stored indications of the state of the selected application are then utilized to

automatically generate a report including a distribution of the execution times for the

selected application" (col.2, lines 8-30).

It would have been obvious to apply the teaching of Jackson for "indicates that

the thread is running by comparing the information to stored information from previous

interrupt of all threads" in order to provide means for efficiently identifying areas of the

application program requiring excessive execution time.

11.   As to claim 13, the rejection of claim 1 above is incorporated herein in full. Claim

13, however, further recites " a multi-threaded program."

Jackson teaches a multi-threaded program *(abstract and col.2, lines 3-30)*.

12.   As to claims 5 and 21, the rejection of claim 1 above is incorporated herein in full.

Claims 5 and 21, however, further recites suspending execution of the multi-threaded

program and retrieving register data corresponding to the selected thread.

Jackson teaches suspending execution of the multi-threaded program and

retrieving register data corresponding to the selected thread *(col.2, lines 16-30)*.

13.   As to claims 6, 14, and 22 Jackson teaches updating the previous register

information based on the computed value *(col.2, lines 8-30 and col.3, lines 45- 54)*.

14.   As to claim 15, Jackson teaches providing an indication corresponding to a

portion of the program containing the selected thread *(abstract and col.2, lines 8-30)*.

15.   As to claims 26 and 30, Jackson teaches assigning a cost indicator to an identified

portion of the program that is active when it is determined that the selected thread is

running *(col.2, lines 8-30 and col.3, lines 45- 54)*.

16.   As to claims 27, 29, 31, and 33, Jackson teaches the cost indicator reflects a

number of cycles the selected thread was running in the identified portion of the program

(col.2, lines 8-30 and col.3, lines 45- 54).

17.   As to claims 28 and 32, Jackson teaches the t indicator reflects a number of cycles

the selected thread was running in a portion of the program that is active when it is

determined the selected thread is running *(col.3, lines 9-44)*.

Response to Arguments

18.   Applicants' arguments filed January 27, 2004 have been considered but are moot in view of the new ground(s) rejection.

Conclusion

19.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

      - Reiffin (US 5694603) teaches "A multithreading computer system for the preemptive asynchronous concurrent execution of a plurality of instruction threads of a multithreaded application program."

20.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to VAN H NGUYEN whose telephone number is (703) 306-5971. The examiner can normally be reached on Monday-Thursday from 8:30AM - 6:00PM. The examiner can also be reached on alternative Friday.

      The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

VHN

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